BOOK REVIEWS

"AN INTRODUCTION TO CELESTIAL MECHANICS". By Theodore E. Sterne. Number 9 of Interscience Tracts on Physics and Astronomy, edited by R. E. Marshak. 206 pp. Interscience Publishers Inc. New York, 1960

On going carefully through the book, one is impressed by the learned and persuasive style of this work. There are many books on astronomy or on mechanics and more on geophysics. But a book with such well-chosen topics as are of general and specific interests, is undoubtedly a timely contribution to the literature, and Professor Sterne, who is himself an authority on the subject, has indeed done pioneering work in writing this text.

In recent years with the dawning of the space age and with the great strides that have already been made in this field, the problems of close earth satellites are of great interest to the people of various disciplines. Our impression is that the book is of value for reference to the specialists and will be useful to the advanced students not only of physics, astronomy and engineering (to whom the book is primarily addressed) but also to those of geophysics.

The book is divided into six chapters. The principal aim of the book appears to be to prepare the reader for an understanding of the various problems connected with the artificial earth-satellites which are taken up in the last two chapters. Authors has adequately discussed about his own method as well as these of others for treating the various perturbations involved.

Chapter I discusses gravitation and planetary motions and their orbits. Chapter II is a good account of potential theory for irregular bodies and may be of interest to nuclear physics also, since such gravitational potential is closely analogous to the electrostatic potential of deformed nuclei. In Chapter III the reader is given some glimpses into such complicated topics as the units, orbital elements, time, various precessions and nutations which are primarily the topics of astronomy but have been rendered quite suited to the general readers.

Chapter IV is on classical dynamics dealing with Lagrangian and other equations of motion. This chapter will undoubtedly be the center of interest for many readers. We are however, unable to see the special advantage of the figure 4 over the conventional diagrams generally used to illustrate the Eulerian angles, particularly because the angle ψ is not indicated in this diagram.

The style of the book is throughout simple, precise and helpful with many examples and hints. Besides, the printed text is kind to the eye.

Finally, it may be mentioned that we have heard about 'printer's devil'. But it appears that the 'binder's devil' can also sometimes do more mischief. The copy of the book given to the reviewer has duplication of the pages from 53

to 84 and unfortunate omission from the pages 85 to 116. Hope this has happened only to the reviewer who did miss those pages.

M.L.C

PROBLEMS IN QUANTUM MECHANICS—I I Goldman and V. D Krivchenkov. Pergamon Press.

The book under review, an English translation from the original Russian, is an excellent contribution which will be undoubtedly highly helpful to the students who like to acquaint themselves with the mathematical techniques of quantum mechanics. As the name suggests, the book contains a large number of worked out problems of preliminary and medium standard, covering almost all the topics of quantum mechanics, usually found in standard textbooks Although the authors in the preface have stated that the problems are intended for the students who use the book of L. D Landau and E. M. Lifshitz as their basic text book, the present contribution may also be fruitfully utilized by those who follow other standard textbooks. Of course, the authors have followed the notations similar to those used by Landau and Lifshitz and I think, in some cases more convenient notations would have been preferable. However, the working out of the problems is so logical, methodical and clearly expressed, and the sequence of the chapters and the problems in a chapter are so nicely exposed that even a student having a very preliminary knowledge of quantum mechanics finds no difficulty in going through the worked out examples. A few remarks need mention for an unbiased review of the book. Although the worked out examples extend over a wide range of varieties, the treatment would have been more complete to specialist readers, if it could include some more sophisticated problems, such as those involving the use of time dependent perturbation, permutation of identical particles, the method of second quantization etc. On the whole, the book will undoubtedly benefit those interested in strengthening their basis for handling the intricate mathematical techniques of quantum mechanical calculations.

U. S. Ghosh

PHYSICS OF COMPUSTION AND EXPLOSION—by L. N Khitrin. Pp.456 Published by the Isreal Program for Scientific Translations, Jarusalen, 1962 Price $ 12.00 or 84s.

The present book on the physics of combustion has been composed on the basis of lectures, delivered for many years at the Department of Physics of Mowcow University. The original book in Russian language has been translated into English by the Isreal Program for Scientific Translations.

Recently, the problems in the theory of combustion have acquired an important field of investigations, since many technological fields including the space-

ships, can not be fruitfully developed without profound knowledge of the nature and laws of combustion of the various combustible substances. A large number of Universities in the U.S.S.R., U.S.A., U.K. Japan and France are now carrying on extensive research work on combustion and explosion. The present book will not only provide a substancial help to those who are engaged in combustion research, but also to the beginners on this subject it will be regarded as a teacher of such qualifications who can make very difficult problems easily understandable to his pupils.

In accordance with the physical and chemical processes involved in combustion of different combustible substances, the science of combustion can be divided into three parts : conbustion of gases, combustion of liquid and solid fuels, and explosions. Of these, the combustion of gases has been treated in detail in the present volume. The science of combustion in solid and liquid fuels has occupied the last three chapters of the book. The physics involving explosion has not been included in the book. Starting with the short outline of chemical kinetics, the chapters dealing with the combustion of gases include (i) ignition process, (ii) the process of flame propagation and (iii) the combustion problems in internal combustion engines and gas turbines. At the end eight plates have been presented showing flame propagations under different conditions.

Though a book of advanced study in the physics of combustion, nevertheless, it provides a pleasant reading. It is possibly the best text book on this subject, at the same time it will be treated as a very helpful guidance by those who are interested in combustion research.

M. M. M.

ERRATA

Dielectric absorption of 3.14 cm microwaves in some polar liquids—Part II. substituted halo-benzenes and naphthalene.

J. Bhattacharyya, S. B Roy and G. S Kastha

Vol 40,, No. 4, April, 1966

Page 188 6th line from the bottom read ϵ'' and ϵ' instead of ϵ''.
4th line from the bottom read "Infinite frequency" instead of "static"

Page 191 Table VI

In the 6th. column read the heading as $\frac{4}{3}\ \pi abcf\ldots$ instead of $4\pi abcf$

Page 196, Captions to Fig. 6a- curve (v) and curve- (vi)- "The scale of τ values given on the right" refer to both the curves.

Page 196 Fig. 6b—The Roman numerals on the curves in the body of the figure are to be interchanged.